

Indices and Brackets

The PowerPoint contains the slides shown below and these give an animated presentation explaining how to remove the brackets in cases like $(4t^2)^3$. There are questions with worked answers.

Indices and Brackets

Object: Understand how to remove the brackets in cases like $(4t^2)^3$

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Sometimes, we need to remove the brackets in terms like:

$(3^2)^4$ 3² = 3 × 3 Raised to the power of 4 gives...

$(3 \times 3)^4$ We don't need the brackets This is 3⁸

$(3 \times 3) \times (3 \times 3) \times (3 \times 3) \times (3 \times 3)$

$3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 3^8$

We multiply the two indices... $(3^2)^4 \rightarrow 3^{(2 \times 4)} = 3^8$

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So to remove brackets, we multiply the indices inside by the index outside the brackets.

Here is another example: Remember the 4 and y have an index of 1

$(4x^2y)^3 \rightarrow 4^{(1 \times 3)} x^{(2 \times 3)} y^{(1 \times 3)}$

Multiply the indices inside by the index outside... $\rightarrow 4^3 x^6 y^3 = 64x^6y^3$

Evaluate the number term

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Write as an equivalent terms without the brackets and evaluate where possible:

1. $(2^3)^3$
2. $(3^2)^2$
3. $(4x^3)^2$
4. $(2y^2)^3$
5. $(4t^2v)^3$
6. $(3x^2y^4)^2$
7. $(3xy^3)^4$
8. $(5hm^4)^3$

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Write as an equivalent terms without the brackets and evaluate where possible:

1. $(2^3)^3 \rightarrow 2^9 \rightarrow 64$
2. $(3^2)^2 \rightarrow 3^4 \rightarrow 81$
3. $(4x^3)^2 \rightarrow 4^2x^6 \rightarrow 16x^6$
4. $(2y^2)^3 \rightarrow 2^3y^6 \rightarrow 8y^6$
5. $(4t^2v)^3 \rightarrow 4^3t^6v^3 \rightarrow 64t^6v^3$
6. $(3x^2y^4)^2 \rightarrow 3^2x^4y^8 \rightarrow 9x^4y^8$
7. $(3xy^3)^4 \rightarrow 3^4x^4y^{12} \rightarrow 81x^4y^{12}$
8. $(5hm^4)^3 \rightarrow 5^3h^3m^{12} \rightarrow 125h^3m^{12}$

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